

STERILCO TEMPERATURE CONTROL UNIT

SERVICE AND INSTRUCTION MANUAL

MODEL 6111

STERLING, INC.
5200 West Clinton Avenue
Milwaukee, Wisconsin 53223

Sterlco®

model 6111-E

single zone
temperature
control unit

- 40 GPM CIRCULATING RATE
- CLOSED WATER CIRCUIT
- SINGLE SET THERMOSTAT

HEATER — 9000 watts — 3 phase. Low watt density assures long life . . . proper heating characteristics for water. 4500 watt heaters optional.

CONTROL — Single setting thermostat controls both heating and cooling. Large, easily read etched aluminum dial. Full temperature range on one dial . . . 50-250° F. Separate switch for selective heating or cooling with pilot light for each.

PUMPING CAPACITY — Nominal rating 40 gpm @ 20 lb. discharge pressure for the entire unit.

CLOSED WATER CIRCUIT — Same water is recirculated constantly. Cooling is accomplished through a heat exchanger of approximately 4 sq. ft. area. Unit automatically keeps itself filled.

ELECTRICAL — 3/60/220 or 3/60/440 standard . . . other specifications available.

HOSE CONNECTIONS — 1 1/4" delivery and return connections; 1/2" water supply and drain connections . . . all at top rear of unit.

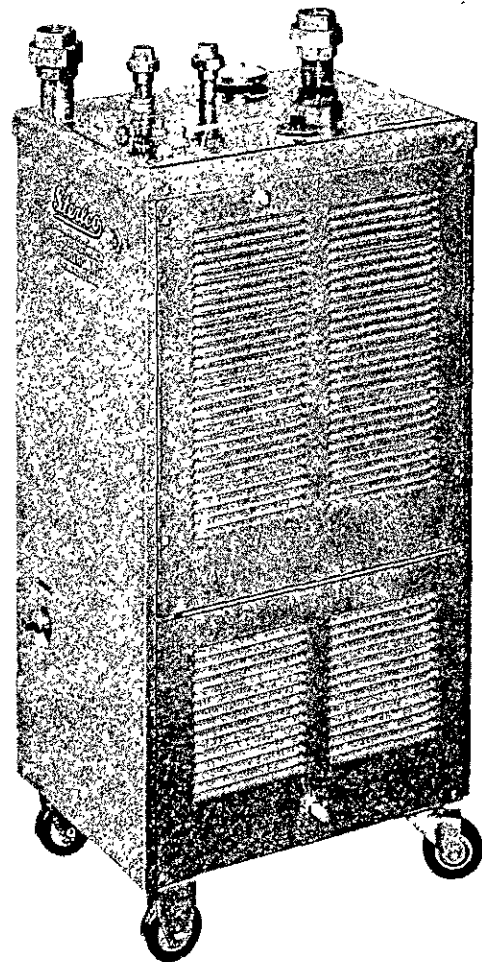
STRAINERS — 1/2" Y strainer on water supply — 1 1/4" Y strainer on circulation system. Both blow-offs piped to drain.

CABINET — Welded steel frame; side covers easily removable; properly louvered for ventilation; overall dimensions of unit 43 1/2" high x 18" wide x 14" deep, with casters.

APPROX. SHIPPING WEIGHT — 300 lbs.

NOTE:

All brass circulating system, including pump and heater tank, available as optional construction.

**Sterling inc.**

Leaders in Temperature Control Equipment since 1916

5200 West Clinton Avenue • Milwaukee 23, Wisconsin

Other Sterlco Products: STEAM TRAPS • F & T TRAPS • RADIATOR VALVES • THERMOSTATIC RADIATOR VALVES • CONDENSATION PUMPS • TANK AND PROCESS TEMPERATURE CONTROLS • CAST IRON STRAINERS • BRASS STRAINERS

Please note that our address and phone information has changed. Please reference this page for updated contact information.



These manuals are obsolete and are provided only for their technical information, data and capacities. Portions of these manuals detailing procedures or precautions in the operation, inspection, maintenance and repair of the products may be inadequate, inaccurate, and/or incomplete and shouldn't be relied upon. Please contact the ACS Group for more current information about these manuals and their warnings and precautions.

Parts and Service Department

The ACS Customer Service Group will provide your company with genuine OEM quality parts manufactured to engineering design specifications, which will maximize your equipment's performance and efficiency. To assist in expediting your phone or fax order, please have the model and serial number of your unit when you contact us. A customer replacement parts list is included in this manual for your convenience. ACS welcomes inquiries on all your parts needs and is dedicated to providing excellent customer service.

For immediate assistance, please contact:

- North, Central and South America, 8am – 5pm CST +1 (800) 483-3919 for drying, conveying, heating and cooling and automation. For size reduction: +1 (800) 229-2919.
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Let us install your system. The Contract Department offers any or all of these services: project planning; system packages including drawings; equipment, labor, and construction materials; and union or non-union installations.

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STERLCO TEMPERATURE CONTROL UNITS

MODEL.. 6111

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STERILCO MODEL 6111 TEMPERATURE CONTROL UNIT

INSTALLATION

The unit is complete and ready to operate as soon as it is connected to a source of electric power, a supply of cold water, and a drain for waste warm water. For your convenience, the unit has two drain connections. Only one need be used, the other should be plugged. Electrical cable and hoses are not furnished with the unit since lengths and sizes will vary for each installation.

Before making electrical and hose connections, be sure that heater and pump switches are off and that fill valve is closed,

ELECTRICAL CONNECTIONS

The unit is provided with an opening in the side panel for connecting the power supply conduit. The lines of the three phase power supply should be connected to the three open terminals of the contactor. These terminals are marked. To prevent accidents, a substantial ground connection must be made. A terminal for this purpose is provided.

The immersion heater in this unit is for three phase power supply, and the unit needs to be connected only to three phase line. Current-carrying capacity of the power supply wiring should be:

<u>MODEL *</u>	<u>3/60/220</u>	<u>3/60/440</u>
<u>6111-H</u>	<u>30 amp.</u>	<u>15 amp.</u>

* with standard 9 KW heater

CIRCULATING CONNECTIONS

The circulating connections, marked delivery and return have 1-1/4" female unions. If circulating lines are reasonably short, 1-1/4" pipe or hose will give good circulation. If they must be more than ten or fifteen feet long, larger pipe or hose should be used. Smaller fittings may sometimes be used if limited circulation and slower response will not be harmful. If two or more branches are to be fed by one zone of control, run a single large line from the unit to a point near the mold or other device being controlled, so that the smaller branches can be as short as possible.

Large hoses or piping and large passages in the mold or device being controlled will provide faster water circulation and consequently more accurate and sensitive control and more effective and even heating or cooling. Avoid couplings and fittings having small openings which may restrict flow, especially many types of quick-acting compressed air fittings which not only have extremely small openings but also leak when subjected to water pressure. This is very important! Small hoses, small passages in the equipment being controlled, small couplings, or anything else which slows up the circulation of the water will make the unit respond too slowly to adjustments or changes in conditions. As a result, it will take too long, when starting up, to set the controls for the desired temperature. In extreme cases, poor circulation may make the unit seem to behave erratically or fail to hold temperatures steady.

Where hoses are used in circulating lines, there are many types which are large enough, flexible enough, and resistant to hot water. One satisfactory brand is Goodyear "Ortac" one - braid hose.

For hose connections, male pipe thread couplings can be used conveniently in combination with standard female pipe unions. One such hose coupling is made by the Stayput Clamp and Coupling Co., Denver, Colorado. Or quick-acting couplings can be used if they are a type which does not have too small an opening. A satisfactory line of quick-acting couplings is made by the Hansen Manufacturing Company of Cleveland, Ohio.

WATER SUPPLY CONNECTION

A source of cold water under pressure should be provided by connection at the opening marked water supply. Before turning on the water, valves marked fill should be closed.

Water supply pressures up to about 100 pounds per square inch will not harm this unit; the pressure relief valve on the heater tank is set for 125 pounds. But if you wish to operate with a lower water pressure to avoid these leaks, or to protect the unit against extreme pressure fluctuations, use a low-priced pressure regulator such as the Bell & Gossett No. B3 or Watts 45A. Consistently high pressures may cause excessive rotary seal wear.

DRAIN CONNECTION

For your convenience, two drain openings are provided. Only one need be used. The other should be plugged.

A hose or pipe should be run from the drain to a location where waste warm water can be disposed of. Some users prefer to have the end of this line spill into a drain at a point where the operator of the unit can observe when and how the cooling control is operating.

The drain connection can be made to a closed return line, if desired, as long as the back-pressure is not great enough to prevent the warm water from flowing.

OPERATION

After all hose, piping, and electrical connections are made, the following sequence of steps should be followed to put the unit into operation. All switches should be off and all manual valves closed before starting.

1. Open fill valve to allow water to enter the unit fill the circuit through the dies. THIS VALVE SHOULD BE KEPT FULL OPEN.
2. Open the door on the lower part of the front panel and open the valve marked vent flow-off for a period of 2 to 3 minutes to bleed the air from the system. Then close it securely.
3. Turn on the pump switch to start water circulating.

(NOTE: IF EITHER THE PUMPS OR THE HEATERS ARE OPERATED WHEN THE UNIT IS NOT FULL OF WATER, DAMAGE TO THE UNIT MAY RESULT).

4. Set the thermostat knob at desired temperature and turn on the heater and cooling switches. The heater will operate until the temperature setting is reached, and the heater pilot light will indicate when it is operating. If the thermostat requires recalibrating, this can be done by merely removing the thermostat knob and replacing it to make thermostat dial markings agree with thermometer readings. For re-calibrating differential see Bulletin #F43-A.
5. STRAINERS One "Y" strainer is installed in the return line to protect the units component parts against dirt in the circulating system, and one 1/2" "Y" strainer to be installed in the water supply line to protect the entire unit against foreign matter from that source.

These strainers will hold a considerable quantity of dirt before they start to clog. However, they should be cleaned out daily by simply opening the 3/8" blow-off valves which are piped directly to drain.

6. DRAINING. When the unit is not in use, or if it is to be temporarily exposed to freezing weather, it should be thoroughly drained. After the delivery and return hoses or piping have been disconnected from the unit, remove the pipe plugs in the union tees below the connections of the pumps and tank.

MINIMUM WATER SUPPLY PRESSURE REQUIREMENTS

Below are tabulated the minimum water supply pressure required for operation at various temperature levels. The "Drop to" pressure would be the supply line pressure when the unit is cooling. It is therefore necessary to have an adequate supply pressure and a hose large enough to supply cooling water to the unit without excessive pressure drop during cooling. A 1/2" hose should be adequate.

<u>Temperature</u>	<u>Min. Supply Pressure</u>	<u>Drop To</u>
210 and lower	15 psig	12 psig
230	22	17
250	30	26

OPERATION AT TEMPERATURE OVER 200°F.

We can operate over the normal boiling point of water by keeping the system under pressure. This pressure comes from your plant water supply via the water supply line to the Sterlco. Therefore as long as the pressure on the Sterlco system is maintained above the required minimum, the unit will work normally and with very good control.

Hose and fittings: before operating your unit at temperatures over 200 we urge that you check to be certain that your fittings and hoses are suitable for the temperatures and pressures to be encountered.

Refer to page I-2 for further data on water supply requirements.

DWG. NO: 14006

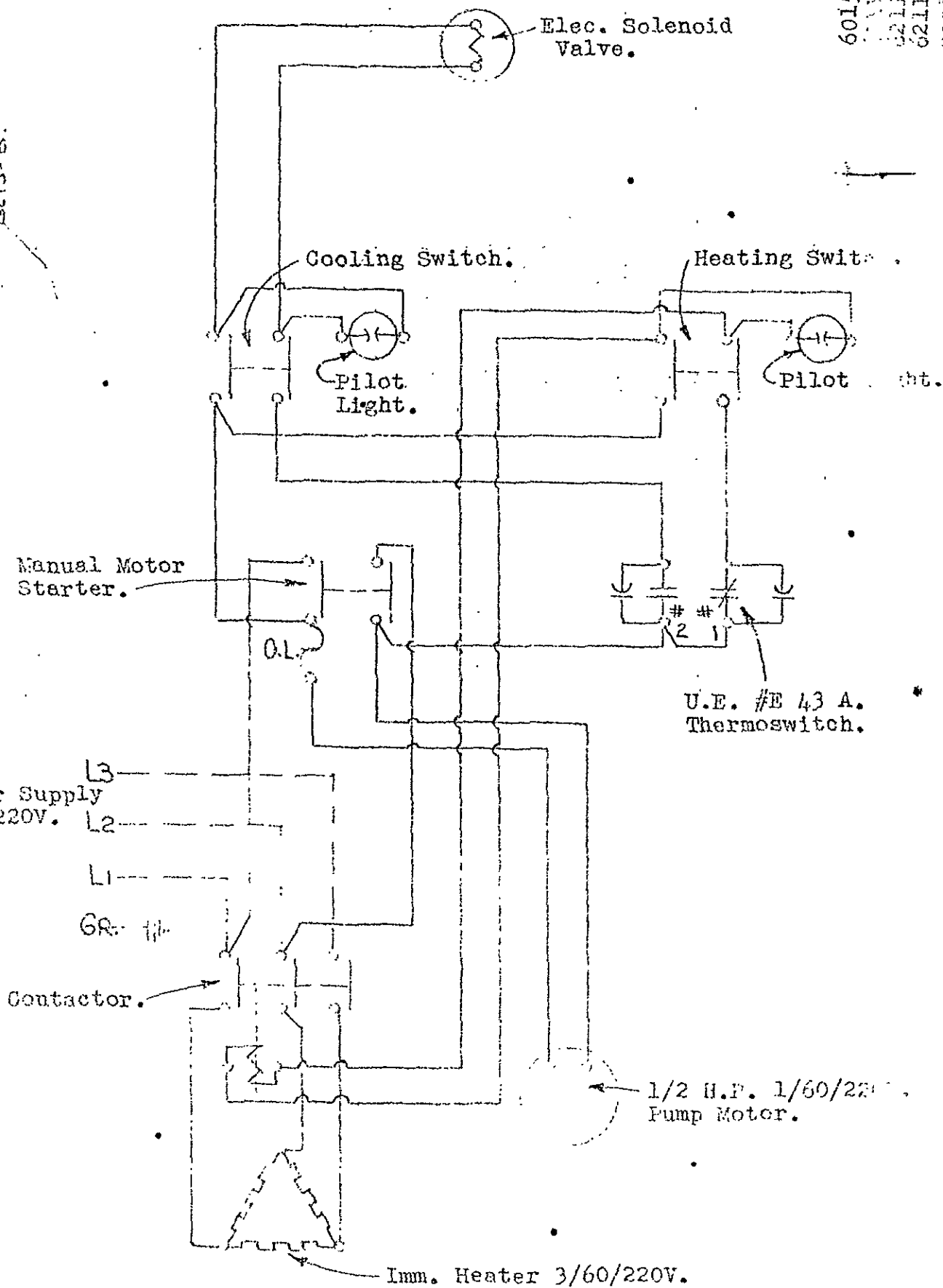
(2) As wiring diag. For 6211-A 10-2-62 LT.

(3) As wiring diag. For 6211-C, 0111-C, 10-2-62 LT.

(4) As wiring diag. For 6211-B, 10-2-62 LT.

(5) As wiring diag. For 6211-D, 10-2-62 LT.

Used on: 6211-B,
6111-C,
6111-D,
6213-B.



6015-D
6211-D
6211-B used

Page 11

DRG. NO.
14608

5

SCALE

DATE
9-25-64

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Final

STERLING, INC.

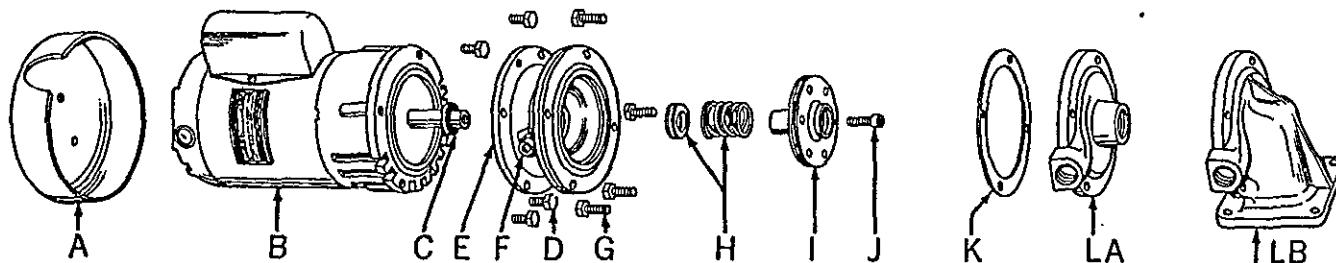
REPLACING ROTARY SEAL ASSEMBLY ON STERLCO PUMP AND MOTOR

PARTS

A. Drip Cover
B. Motor
C. Water Slinger
D. Motor Screws

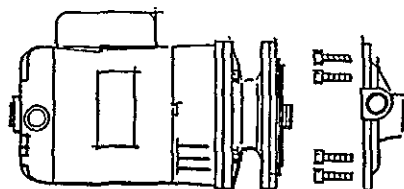
E. Bracket
F. Prime Cock
G. Pump Screws
H. Rotary Seal Assembly

I. Impeller
J. Impeller Screw
K. Housing Gasket
L. Volute - A or B

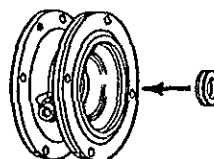


Step No. 1 — Dis-assembling (Removal of old seal assembly)

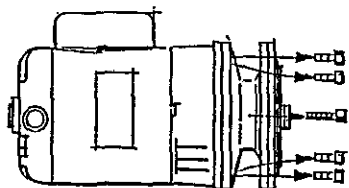
Step No. 2 — Re-assembly (Installation of new seal assembly)



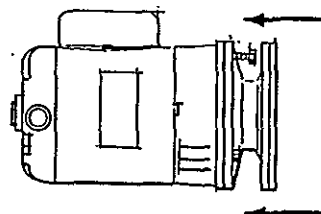
a) Remove volute from motor bracket and impeller assembly by removing pump screws.



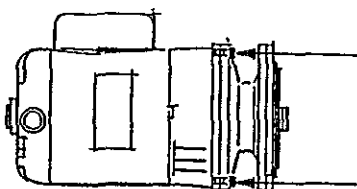
f) Coat outside edge of new seat with 3% detergent solution and slip it into the bracket. Press into bracket with thumbs or wooden dowel. Handle seat carefully so seating surfaces are not scratched or chipped . . . be sure it is squarely seated.



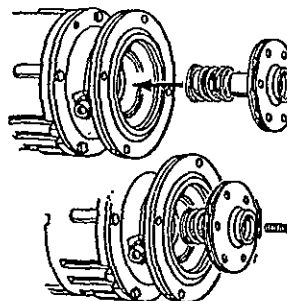
b) Remove impeller screw and motor screws. (Note: opposite end of motor shaft is fitted with screw driver slot to hold shaft securely while impeller screw is being removed. Drip cover must be removed to get at screw-driver slot).



g) Remount bracket on motor.

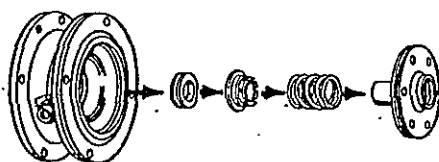


c) Insert two of the pump screws into the two threaded holes in the bracket. Tighten them slowly and evenly to force the impeller and bracket off the shaft. Do not pry the impeller or bracket!



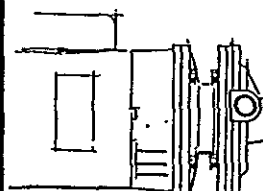
h) Lubricate impeller hub. 3% detergent solution . . . slip new bellows and spring onto impeller hub. Be sure bellows slides freely on impeller hub.

i) Replace impeller on motor shaft extension and secure with impeller screw. Hold shaft with screw driver slot while tightening screw.



d) Remove old seal parts from impeller hub and bracket. Be sure water slinger is in place.

e) Clean impeller hub thoroughly . . . remove all loose particles of dirt, grease, etc. Use fine emery cloth if necessary. Also clean the recess in the bracket so the new seat will fit perfectly. Remove all particles and dirt on gasket surfaces of the two castings.



j) Replace volute onto bracket, using new housing gasket. Use one gasket for condensate pump and for temperature control units. Secure with pump screws. Be certain gasket is seated properly.

NOTE: When ordering parts please indicate pump model number and serial number.

STERLING, INC. 5200 W. Clinton Ave., Milwaukee, Wisconsin 53223

SPARE PARTS LIST

R-150-FC	Temp control (cooling) valve 80-170 range w/ 6' capillary	\$304.00
001-06850	Impeller Screw	\$0.70
044-00041	Vent priming cock (with fittings)	\$5.75
081-00024-02	Rotary Seal Assy	\$38.75
542-10404-00	Water Slinger	\$0.80
545-00001	Housing Gasket-one(1) required per pump	\$2.95
615-13341-01	Bracket E-per form I-4100-EI	\$77.00
615-14921-00	Volute A-per form I-4100-EI	\$64.00
695-13359-00	Impeller, standard brass	\$76.00
037-00004	Thermometer(6012,6015,6022,6031)	\$75.00
037-00009	Thermometer(6210,6211,6221,6231,6111-C,6121-C,6131-C)	\$68.00
044-00149	Pressure Relief Valve 1/2" 150 PSI	\$30.50
106-00002-00	Heat exchanger 3.7 sq.ft.(6111,6121,6131)	\$473.00
147-00004	Thermoswitch Pointer for 724-00033 Thermostat only	\$2.85
724-00262	Thermostat (6210,6211,6221,6231,6111-C,6121-C,6131-C)	\$236.00
692-09988-01	Dial Assy. for 724-00262	\$36.75
162-00012-03	Microswitch (RR 441) Heat, for 724-00025 Thermostat only	\$19.50
162-00012-04	Microswitch (GR 441) Cool, for 724-00025 Thermostat only	\$33.75
573-00004	Screen for 1/2" and 3/4" "Y" Strainers	\$2.25
605-00007-02	Complete P&M assy 1/2HP single phase	\$441.00
605-00007-05	Complete P&M assy 1/2HP 3phase, TENV	\$464.00
695-16119-01	Motor & impeller assy., single-phase, 1/2 hp	\$371.00
682-02878-05	Transformer 1KVA, 460/230/115V-1hp. (with kit)	\$371.00
715-02001	Pilot light, bulb	\$3.25
715-10025	Pilot light receptacle (red lens)	\$22.75
715-10026	Pilot light receptacle (Amber lens)	\$22.75
717-04001	Heater Switch-Cooling Switch	\$14.75
720-09026-00	Single-phase motor, 1/2 hp Standard	\$228.00
720-09027-00	Three-phase motor, 1/2 hp TENV	\$309.00
722-00051-10	Immersion heater 4.5kw-3ph. 230v threaded	\$254.00
722-00051-11	Immersion heater 4.5kw-3ph. 460V threaded	\$242.00
722-00051-16	Immersion heater 9kw-3ph. 208V threaded	\$270.00
722-00051-08	Immersion heater 9kw -3ph. 230v threaded	\$230.00
722-00051-09	immersion heater 9k2-3ph. 460V threaded	\$230.00
722-00051-12	Immersion heater 9kw-3ph. 550V threaded	\$270.00
724-00033	Thermoswitch, Specify Range(6002,6012,6015,6022,6031)	\$159.00
726-00030	Pump starting switch, less element	\$71.00
729-00011	Replaced by 729-00084 Contactor 35 amp	\$55.00
729-00012	Replaced by 729-00084 Contactor 35 amp	\$55.00
732-00011	Solenoid Valve, 1/2" w/230V Coil(61110c,61210C,61310C)	\$104.00
732-00020	Solenoid Valve, 1/4" w/230V Coil(6210,6211,6221,6231)	\$68.00
632-02858	Pressure Switch	\$71.00